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# International Standard



# 5560

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Dehydrated garlic — Specification

*Ail déshydraté — Spécifications*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5560 was developed by Technical Committee ISO/TC 34, *Agricultural food products*.

This second edition was submitted directly to the ISO Council, in accordance with clause 6.11.2 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 5560:1981), which had been approved by the member bodies of the following countries :

Australia	Hungary	South Africa, Rep. of
Brazil	India	Spain
Bulgaria	Israel	Thailand
Chile	Kenya	Turkey
Cyprus	Korea, Rep. of	United Kingdom
Czechoslovakia	Mexico	USA
Egypt, Arab Rep. of	Netherlands	USSR
Ethiopia	Poland	Yugoslavia
France	Romania	

The member body of the following country had expressed disapproval of the document on technical grounds :

Canada

# Dehydrated garlic — Specification

## 1 Scope and field of application

1.1 This International Standard specifies requirements for dehydrated garlic in its various commercial forms (the main forms are listed in annex A).

1.2 Recommendations relating to storage and transport conditions are given in annex C.

NOTE — At present, microbiological requirements are not specified. However, requirements relating to certain micro-organisms may be incorporated when data collected on the basis of standard methods become available. In particular, investigations may be carried out to assess the need for specifying the absence of *Salmonella* spp and presumptive enterotoxic staphylococci. Requirements relating to aerobic mesophilic, spore-forming organisms, *Escherichia coli*, spores of mesophilic sulphite-reducing clostridia, and yeasts and moulds may also be considered as quality indicators.

## 2 References

ISO 565, *Test sieves — Woven metal wire cloth and perforated plate — Nominal sizes of apertures.*

ISO 927, *Spices and condiments — Determination of extraneous matter content.*

ISO 928, *Spices and condiments — Determination of total ash.*

ISO 930, *Spices and condiments — Determination of acid-insoluble ash.*

ISO 939, *Spices and condiments — Determination of moisture content — Entrainment method.*

ISO 948, *Spices and condiments — Sampling.*

ISO 1208, *Ground spices — Determination of filth.*

ISO 5498, *Agricultural food products — Determination of crude fibre content — General method.*

## 3 Requirements

### 3.1 Description

3.1.1 Dehydrated garlic is the product obtained exclusively from sound cloves of garlic (*Allium sativum* Linnaeus), prac-

tically free from moulds, disease, soil, outer skins, stems and roots, by removal of most of the moisture using methods allowing the characteristics of the fresh product to be regained on rehydration.

3.1.2 The colour shall be between white and pale cream.

3.1.3 The product shall be practically free from scorched, toasted and baked particles.

### 3.2 Odour and flavour

#### 3.2.1 Odour

The odour of the dehydrated garlic shall be characteristic, pungent and free from foreign odours and off-odours such as those resulting from musty, rancid, fermented or scorched particles.

#### 3.2.2 Flavour

The flavour of the dehydrated garlic can be assessed after rehydration in accordance with annex B. The flavour of the rehydrated product shall be characteristic of parboiled garlic and free from foreign flavours or off-flavours such as those resulting from musty, rancid, fermented or scorched particles.

### 3.3 Freedom from contamination

The dehydrated garlic shall be free from living insects, and shall be practically free from moulds, dead insects, insect fragments and rodent contamination visible to the naked eye (corrected, if necessary, for abnormal vision), with such magnification as may be necessary in any particular case. If the magnification exceeds X 10, this fact shall be stated in the test report.

In case of dispute, contamination in garlic powder and garlic grits shall be determined in accordance with ISO 1208.

### 3.4 Extraneous matter

The total proportion of extraneous matter, determined in accordance with ISO 927, and of extraneous matter originating from the plant (coarse particles, papery membranes, roots, etc.) shall not exceed 0,5 % (m/m).

**3.5 Classification**

Sieving for classification of dehydrated garlic into commercial forms may be carried out in accordance with annex A.

**3.6 Sensory evaluation**

Rehydrate and test a sample of the garlic in accordance with annex B.

**3.7 Chemical characteristics<sup>1)</sup>**

The dehydrated garlic shall comply with the requirements given in the table.

**4 Sampling**

**4.1 Garlic powder or grits**

Sample the product in accordance with ISO 948, using a conical sampler.

**4.2 Garlic slices or rings, flakes or pieces**

In the sampling of dehydrated garlic slices or rings, flakes or pieces, special problems arise as a result of the friability of the product and the danger of settling within the container. It may therefore be necessary to take the entire contents of a single container because, during transport, the garlic may settle with larger pieces towards the top and the smaller pieces towards the bottom.

The principles of the method described in ISO 948 apply, with the modifications given below.

**4.2.1 Number of containers to be taken**

Take from the lot about 2 % of the containers, using a table of random numbers agreed between the interested parties. If no table of random numbers is available, use the following procedure.

Starting from any container, count the containers as 1, 2, 3, etc., up to *r* and so on. Withdraw from the lot every *r*th container thus counted for sampling; the value of *r* is equal to

$$\frac{N}{n}$$

where

*N* is the total number of containers in the lot;

*n* is the number of containers to be sampled.

If *r* is a fractional number, take as its value the integral part of it.

At least one container shall be taken.

**4.2.2 Preparation of bulk sample**

Sieve the contents of each container according to the commercial form considered [see annex A, a), b), c) or d)]. Prepare the bulk sample by mixing portions of the different sieved fractions in the proportions determined by sieving. The size of the bulk sample shall be at least three times the quantity of product necessary to carry out all the tests required by this International Standard.

**5 Methods of test**

The samples of dehydrated garlic shall be tested for conformity with the requirements of this International Standard by the methods of test referred to in 3.3, 3.4, 3.6 and the table.

**Table — Chemical requirements for dehydrated garlic**

Characteristic	Requirement		Method of test
	Garlic slices, rings, flakes, pieces	Garlic powder, grits	
Moisture content, % (m/m), max.	8	6	ISO 939
Total ash, % (m/m) (dry basis), max.	5,5	5,5	ISO 928
Acid-insoluble ash, % (m/m) (dry basis), max.	0,5	0,5	ISO 930
Volatile organic sulphur compounds content, % (m/m) (dry basis), min.	*	*	**
Crude fibre content, % (m/m) max.	*	*	ISO 5498

\* Values to be added later.

\*\* International Standard in preparation.

1) Limits for toxic substances will be included later, in accordance with the recommendations of the FAO/WHO Codex Alimentarius Commission.

## 6 Packing and marking

### 6.1 Packing

The dehydrated garlic shall be packed in clean and sound containers made of materials which do not affect the product and which protect it from light and moisture.

### 6.2 Marking

The following particulars shall be marked or labelled on each container :

a) name of the product and the trade or brand name, if any;

b) name and address of the manufacturer or packer, or their registered brand names;

c) name of producing country;

d) net mass;

e) year of production;

f) any other information as may be required by the interested parties or the importers;

g) if appropriate, a statement that the product contains additives.

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## Annex A

### Commercial forms of dehydrated garlic

The various forms of dehydrated garlic are all produced by slicing peeled sound garlic cloves into flat slices (of thickness agreed between the interested parties), which are dehydrated, graded and further processed as necessary.

The following broad categories are recognized in the trade, though commercial contracts may include modified requirements for particle size :

a) **garlic slices or rings** (French : "ail en tranches ou en lanières") : Dehydrated garlic in pieces larger than 4 mm (largest dimension) — slices and pieces of garlic obtained by cutting garlic cloves into slices and removing broken pieces smaller than 4 mm by sieving.

b) **garlic flakes or garlic in pieces** (French : "ail en flocons ou en morceaux") : Dehydrated garlic passing a sieve of 4 mm aperture size but retained on a sieve of 1,25 mm aperture size — a product comprising particles without definite shape.

c) **garlic grits** (French : "ail en semoule") : Dehydrated garlic passing a sieve of 1,25 mm aperture size but retained on a sieve of 250  $\mu$ m aperture size.

d) **garlic powder** (French : "ail en poudre") : Dehydrated garlic passing a sieve of 250  $\mu$ m aperture size — a uniform product of which 95 % passes the sieve.

NOTE — In testing for particle size, use sieves of the aperture sizes specified in ISO 565.

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## Annex B

### Rehydration and sensory evaluation of dehydrated garlic

#### B.1 Garlic slices or rings

##### B.1.1 Apparatus

**B.1.1.1 Vessel**, made of a material which will not affect the taste or colour of the preparation.

**B.1.1.2 Dish**, made of white porcelain, glazed earthenware or glass.

**B.1.1.3 Stainless steel spoon**.

##### B.1.2 Water

Use distilled or de-ionized water.

##### B.1.3 Preparation

Weigh  $10 \pm 0,1$  g of the sample and transfer it to the vessel (B.1.1.1) containing 500 ml of cold water (B.1.2). Bring to the boil and maintain at  $99 \text{ }^\circ\text{C}$ , keeping the vessel covered, for  $10 \pm 1$  min.

Make up the volume to 500 ml with cold water (B.1.2), and pour into the dish (B.1.1.2).

##### B.1.4 Sensory evaluation

Immediately carry out sensory evaluation of the following characteristics, in the order given :

- colour;
- appearance of the cooking water (colour and clarity);
- odour;
- flavour;
- tenderness.

#### B.2 Garlic powder, grits, flakes or pieces

##### B.2.1 Apparatus

**B.2.1.1 Vessel**, made of a material which will not affect the taste or colour of the preparation.

**B.2.1.2 Dish**, made of white porcelain, glazed earthenware or glass.

**B.2.1.3 Stainless steel spoon**.

##### B.2.2 Products

**B.2.2.1 Flour**, made from durum wheat from the most recent harvest and known to be of good quality.

##### B.2.2.2 Water

Use distilled or de-ionized water.

##### B.2.3 Preparation of the medium

Transfer 1 000 ml of cold water (B.2.2.2) into the vessel (B.2.1.1) and add, stirring continuously, 30 g of the flour (B.2.2.1). Heat and continue to stir until the mixture reaches boiling point, then simmer for 2 min.

##### B.2.4 Mixing of the dehydrated garlic with the medium

Weigh, to the nearest 0,001 g, 0,400 g of the garlic, and place it in the dish (B.2.1.2). Add 250 ml of the medium prepared in accordance with B.2.3 and allow to stand for 5 min, stirring from time to time.

##### B.2.5 Sensory evaluation

Carry out sensory evaluation of the following characteristics, in the order given :

- odour;
- flavour.

## Annex C

### Recommendations relating to storage and transport of dehydrated garlic

(This annex does not form part of the standard.)

#### C.1 Storage

The containers of dehydrated garlic should be stored in covered premises, protected from the sun, rain and excessive heat. The store room should be dry, free from unpleasant odours and proofed against the entry of insects and vermin.

#### C.2 Transport

The containers should be clearly marked with a warning against careless handling which might lead to perforation of the containers. They should be kept dry and cool, stowed well away from ships' boilers or bilges.

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